The opinion in support of the decision being entered today was ***not*** written for publication and is ***not*** binding precedent of the Board.

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

MAILED
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U.S. PATENT AND TRADEMARK OFFICE
BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte KUNG-LIANG KEVIN SUNG
and JYH-YAO RAPHAEL LI

Appeal No. 2005-1574
Application 09/753,428

ON BRIEF

Before WARREN, KRATZ and PAWLIKOWSKI, *Administrative Patent Judges*.

WARREN, *Administrative Patent Judge*.

Decision on Appeal

This is an appeal under 35 U.S.C. § 134 from the decision of the examiner finally rejecting claims 21 through 24. Claim 25 is also of record and has been withdrawn from consideration by the examiner under 37 CFR § 1.142(b).

Claim 21[1] illustrates appellants' invention of a synthetic wood-like product having an external foam skin and a foam core, and is representative of the claims on appeal:

21. A synthetic wood-like product having an external foam skin and a foam core, and being of low density, stable dimension, wood-like surface quality, good flammability resistance and outdoor weather durability, made by the method that comprises:

A.) forming a mixture containing:

(a) about 70 to about 100 parts by weight of vinyl chloride resin;

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[1] We have copied claim 21 as it stands of record in the amendment filed June 23, 2003. See the paragraph bridging pages 2-3 of the answer.

(b) about 10 to about 100 parts by weight of a natural cellulosic product;

(c) about 0.5 to about 10 parts by weight of vinyl chloride resin foaming agent;

B.) mixing the aforesaid mixture in a hot mixer with frictionally induced heating to temperatures of about 80 degrees Celsius up to about 140 degrees Celsius and below the fusion temperature of polyvinyl chloride;

C.) subsequently mixing the mixture from said hot mixer in a cold mixer while cooling said mixture to a temperature of about 25 degrees Celsius up to about 60 degrees Celsius;

D.) plastifying and extruding the mixture through a plastifying and extruding means; and,

E.) slowly cooling extruded product to create a synthetic wood-like product having an external foam skin and a foam core, wherein said cooling is performed in a roller system of a plurality of contra-rotating rollers, said synthetic wood-like product having a surface embossed texture and having a Shore Hardness of at least about 50 D-scale, as measured according to ASTM 2240.

The reference relied on by the examiner is:

Cope	5,951,927	Sep. 14, 1999

The examiner has rejected appealed claims 21 through 24 under 35 U.S.C. § 102(b) as anticipated by or, in the alternative, under 35 U.S.C. § 103(a) as being obvious over Cope (answer, pages 3-4).

Appellants group the appealed claims as rejected (brief, pages 5-6). Thus, we decide this appeal based on appealed claim 21. 37 CFR § 1.192(c)(7) (2003); *see also* 37 CFR § 41.37(c)(1)(vii) (September 2004).

We affirm the ground of rejection under § 103(a) and reverse the ground of rejection under § 102(b). Accordingly, the decision of the examiner is affirmed.

Rather than reiterate the respective positions advanced by the examiner and appellants, we refer to the answer and to the brief for a complete exposition thereof.

Opinion

Our consideration of the application of Cope to claim 21 requires that we first interpret the claim language of this claim by giving the claim terms their broadest reasonable interpretation in light of the written description in the specification, including the drawings, as interpreted by one of ordinary skill in the art, without reading into the claim any limitation or particular embodiment disclosed in the specification. *See, e.g.*, *In re Morris*, 127 F.3d 1048, 1054-55, 44 USPQ2d 1023, 1027 (Fed. Cir. 1997); *In re Zletz*, 893 F.2d 319, 321-22,

13 USPQ2d 1320, 1322 (Fed. Cir. 1989). The plain language of claim 21, drawn in product-by-process format, encompasses a synthetic wood-like product having an external foam skin and a foam core characterized as being made by the method comprising at least the steps stated in the claim, and accordingly, encompasses *any* synthetic wood-like product prepared by any process which results in the characteristics imparted at least by the specified method steps. *See generally, In re Thorpe*, 777 F.2d 695, 697, 227 USPQ 964, 966 (Fed. Cir. 1985); *In re Bridgeford*, 357 F.2d 679, 680-83, 149 USPQ 55, 56-58 (CCPA 1966). We point out that the transitional term "comprising" opens claim 21 to include any manner of additional steps, elements and materials in forming a synthetic wood-like product having "an external foam skin and a foam core." *See*, e.g., *Vehicular Technologies Corp. v. Titan Wheel Int'l Inc.*, 212 F.3d 1377, 1383, 54 USPQ2d 1841, 1845 (Fed. Cir. 2000); *Exxon Chem. Pats., Inc. v. Lubrizol Corp.*, 64 F.3d 1553, 1555, 35 USPQ2d 1801, 1802 (Fed. Cir. 1995) ("The claimed composition is defined as comprising - meaning containing at least - five specific ingredients."); *In re Baxter*, 656 F.2d 679, 686-87, 210 USPQ 795, 802-03 (CCPA 1981) ("As long as one of the monomers in the reaction is propylene, any other monomer may be present, because the term 'comprises' permits the *inclusion* of other steps, elements, or materials.").

The principal issues in this appeal focus on step "E.)" of claim 21. Prior to this step, at least the specified ingredients are admixed as required in steps "A.)' through "C.)" and then plastified and extruded through "a plastifying and extruding means" in step "D.)." We find that the "a plastifying and extruding means" clause specifies "means for" the function of plastifying and extruding but does not define structure which satisfies that function and thus, the strictures of 35 U. S. C. § 112, sixth paragraph, apply. *See Texas Digital Systems, Inc. v. Telegenx, Inc.*, 308 F.3d 1193, 1208, 64 USPQ2d 1812, 1822-23 (Fed. Cir 2002), and cases cited therein. Therefore, the "means" language in this clause must be construed as limited to the "corresponding structure" disclosed in the written description in the specification and "equivalents" thereof. *In re Donaldson Co., Inc.*, 16 F.3d 1189, 1192-95, 29 USPQ2d 1845, 1848-50 (Fed. Cir. 1994) (*en banc*). The "corresponding structure" is that "structure in the written description necessary to perform that function [citation omitted]," that is, "'the specification . . . clearly links or associates that structure to the function recited in the claims.'

[Citation omitted.]" *Texas Digital Systems, supra.* "[A] section 112, paragraph 6 'equivalent[]' . . . [must] (1) perform the identical function and (2) be otherwise insubstantially different with respect to structure. [Citations omitted.]" *Kemco Sales, Inc. v. Control Papers Co.*, 208 F.3d 1352, 1364, 54 USPQ2d 1308, 1315-16 (Fed. Cir. 2000). "[T]wo structures may be 'equivalent' for purposes of section 112, paragraph 6 if they perform the identical function in substantially the same way, with substantially the same result. [Citations omitted.]" *Kemco Sales,* 208 F.3d at 1364, 54 USPQ2d 1315. "[T]he 'broadest reasonable interpretation' that an examiner may give means-plus-function language is that statutorily mandated in [35 U.S.C. § 112,] paragraph six," and in this respect, the examiner should not confuse "impermissibly imputing limitations from the specification into a claim with properly referring to the specification to determine the meaning of a particular word or phrase in a claim. [Citations omitted.]" *Donaldson*, 16 F.3d at 1195, 29 USPQ2d at 1850; *see also Morris*, 127 F.3d 1048, 1055-56, 44 USPQ2d 1023, 1028 (explaining *Donaldson*).

The corresponding "plastifying and extruding means" structure disclosed in the specification is extruder die assembly **40** consisting of extruder **41**, that can be a contra-rotating twin screw extruder, and die head and die lip assembly **42**, that can be a slot die, which forms an extruded material (specification, e.g., page 27, l. 14, to page 29, l. 10, page 34, ll. 7-9, and **Fig. 3**).

We find that claim 21 specifies in the preambular language and in step "E.)" that the synthetic wood-like product of the specified method has "an external foam skin and a foam core" with "a surface embossed texture" and a specified Shore Hardness. There is no limitation which specifies the extent to which the "skin" and the "core" must be "foam," the nature and extent of the "surface embossed texture" of the "foam skin," or the manner in which the embossed texture is produced other than the limitation of "slowly cooling [the] extruded product to create a synthetic wood-like product having an external foam skin and a foam core, wherein said cooling is performed in a roller system of a plurality of contra-rotating rollers." Considering first the "external foam skin," a "foam skin" surface which is *entirely* foam bubbles at the specified Shore Hardness would be "embossed" *per se* within the common dictionary meaning of the term because of the raised surfaces of the bubbles above the plane of the surface of the product.

However, we determine that in context, the "surface embossed texture" of a simulated wood product can be similar to that of a wood board in which a major portion of a relatively flat surface appears to be raised, that is, in relief, with respect to the other portions of the board having a surface below the overall flat surface or plane of the board.[2] Indeed, appellants disclose in the written description in the specification that the "surface embossed texture" can result when (1) the extruded material is "slowly cooled" because "[*s*]*ome of the bubbles* migrate to the surface and burst to form an embossed texture on the surface of the web before the extruded material is solidified," stating that "[*m*]*ost* of the *bubbles* trap inside the extruded material when the thermoplastic mass is cooled and solidified," and (2) rollers having a "pattern-embossed surface" are used (specification, e.g., page 34, l. 10, to page 35, l. 9; emphasis supplied).

We find that the amount of foaming in the skin and the core, including that represented by "some" migrating bubbles in forming the "surface embossed texture" and by "most" tapped bubbles apparently in the core as disclosed, is dependent on the nature as well as the amount of vinyl chloride foaming agent relative to the other two specified ingredients in the mixture in step "A.)" and any additional ingredient(s) which can be present as permitted by the transitional term "comprising." Indeed, the foaming agent forms only about 4.7% to about 11.1% of the weight of the mixture based on the limitations for this ingredient in step "A.)" *without* any additional ingredient(s). Indeed, it is the *other* ingredients in the mixture specified in step "A.)" which form the bulk of the product including its "core" through which the "bubbles migrate to the surface" and in which "bubbles trap."

Thus, we interpret the claim language "synthetic wood-like product having an external foam skin and a foam core" with the "surface embossed texture" and the specified Shore Hardness as prepared by the limitation in step "E.)" of "slowly cooling" the web or foamed board "extruded product to create a synthetic wood-like product having an external foam skin and a foam core," wherein the "said cooling is performed in a roller system of a plurality of contra-rotating rollers" to encompass products wherein the surface of the "foam skin" is embossed

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[2] See generally, the terms "emboss" and "relief" in *The American Heritage Dictionary, Second College Edition* 448, 1044 (Boston, Houghton Mifflin Company, 1982), and the term "embossing" in *McGraw-Hill Dictionary of Scientific and Technical Terms* 672 (5th ed., Sybil P. Parker, ed., New York, McGraw-Hill, Inc. 1994).

because of whole and burst foam bubbles *on* the surface; products which contain foam bubbles *at* the surface some of which have burst through the surface; and products where the surface embossed texture is imparted in whole or in part by patterned rollers before the extruded material is solidified, wherein the patterned rollers can remove foam bubbles and areas of burst bubbles *from* the surface.

We determine that this language of step "E.)" in combination with the transitional term "comprising" encompasses an embodiment illustrated by a post-extruder treatment system shown in specification **Fig. 3**,[3] wherein the extruded material formed by die head and die lip assembly **42** crosses a space before entering cooling roller unit **117** and introduced to the nip between the two rollers that would have been understood by one of ordinary skill in this art to be counter-rotating, wherein cooling roller unit **117** can have "zero to three sets of two rollers" and the temperature can be controlled at a range of about 5° to about 30°C, that is, about 41° to about 86°F (specification, e.g., page 32, ll. 11-15, and page 33, ll. 2-8); the thus rolled and cooled extruded material crosses a second space before entering roller system **110** and introduced to the nip of the first two rollers and then the nip of the second and third rollers of three counter-rotating rollers, wherein the temperature can be controlled at a range of about 25° to about 250°C, that is, about 77° to about 482°F (*id.*, e.g., page 33, l. 10, to page 34, l. 2); and the thus further rolled and cooled extruded material crosses a third space before encountering support rollers **120**, on which the extruded material is still further cooled and solidified, generally under ambient temperature which can be intensified by blowers (*id.*, e.g., page 34, ll. 3-6). We determine that one of ordinary skill in this art would understand that the roller surfaces, both *patterned and smooth*, of roller systems **117**, **110** and **120** shape as well as cool the extruded material.

We find that Cope would have disclosed a composite extrusion profile, which can be extruded material, prepared from a foamed extruded material that has "a smoother skin in the

[3] We note here that the means-plus-function limitation in step "D.)" does not limit step "E.)" to any additional structure associated with the structure disclosed in the specification to which the language of step "D.)" is limited. Thus, we do not interpret claim 21 as limited to the cooling roller systems **117**, **110** and **120** of the embodiment of specification **Fig. 3**. *See Morris*, 127 F.3d at 1054-55, 44 USPQ2d at 1027; *Zletz*, 893 F.2d at 321-22, 13 USPQ2d at 1322.

final product" than in the prior art, which can be used for, among others, moldings and window and door frames, wherein material that contains wood flour and a blowing agent "is extruded through a die and into the shaper," and wherein "[t]he material expands or foams as it enters the shaper and is cooled" and "leaves the . . . shaper in a hardened form which then fully hardens and cools" (col. 2, ll. 5-45). Cope illustrates the preparation of such a profile in **FIG. 2**, disclosing a system comprising extruder **24**, shaper **26**, puller **34** and cut-off table **36**, wherein "the extruded profile **58** is pulled through the die and formed" (col. 3, ll. 6-11). Cope further illustrates the process in **FIG. 3**, disclosing that worm **44** forces the material through die **46** and shaper **48**, wherein shaper **48** "has substantially the same cross-sectional shape as the die," and includes "cylindrical sleeve **50** with a smooth guide wall" and heat controlling jacket **52** for "temperature regulating fluid," and wherein puller **34** draws extruded profile **58** from shaper **48** (col. 5, ll. 12-25). Cope describes the formation of the extrusion profile as follows:

> The material is pushed through the die, where it only slightly expands, and then begins to fully expand as it enters the shaper **48**. The jacket **52** . . . is kept at a temperature lower than the softening point of the extrusion material. As the material contacts the inside wall of the shaper, it begins to harden from the outside surface to the inner core.
>
> The material begins to expand or foam as it passes through the die and then it begins to fully expand as it enters the shaper. A vacuum draw on the shaper helps maintain the profile shape as the cellular materials expands. The material cools as it passes through the shaper and forms its desired shape. A puller acts to draw the extruded profile from the shaper. The profile achieves a cross-section that is substantially the same as the cross-section of the outlet of the shaper. . . . A space of several inches may be present between the die exit and the shaper entrance in order to allow some expansion of the extrudate before entering the shaper. [Col. 5, ll. 25-45.]

Cope teaches the following result effective variables: "[t]he temperature of the die and shaper as well as the speed of the extrusion profile are parameters that affect the properties of the resulting product" (col. 5, ll. 40-42).

We find that Cope discloses in **FIG. 4** the "cross-section of the extrusion profile" **70** of one embodiment which can have "hard skin" **66,68** portions while skin portions **72,74** can be "hardened skin or may be left without a hard skin, as desired" (col. 5, l. 64, to col. 6, l. 1). Cope further discloses in **FIG. 5** "a completed profile for a picture frame" that has decorative portion **76** and hardened skin portions **78,80**, which after being "cured and hardened" can have "various

finishes . . . applied to . . . enhance and highlight the profile," such as "[h]ot foil stampings . . . for further decorative effect" (col. 6, ll. 4-11).

We find that one of ordinary skill in the art would have observed that the articles illustrated in **FIGs. 4** and **5** appear to have smooth surfaces with the exception of the decorative detail **76** in **FIG. 5** which would have been applied by hot stamping after the profile has cured and hardened as disclosed. We further find that this person would have observed in **FIG. 4** the presence of encapsulated wood fibers **73** within the "cellular matrix **75**," the latter reasonably expected from the disclosure of Cope to include foam bubbles that are situated at the surfaces **66,68,70,74** as well as in the core of the profile.

In rejecting claim 21 alternatively under §§ 102(b) and 103(a), the examiner finds that Cope's product has a Shore Hardness in the claimed range, "an embossed surface (i.e., a surface with a raised design [*sic*,)], as evidenced by the protruding portions of the article illustrated in Figs. 4 and 5," and "an external foam skin and a foam core in the disclosure set forth from column 5, line 64 to column 6, line 3" (answer, pages 3-4). The examiner further finds that "portions 72,74 of the profile illustrated in Fig. 4 may be left without a hard skin . . . [and thus,] at least portions of the article may be left with a foam surface or skin," and that "a hard skin may not be formed" with 66,68 (*id.*, page 4). The examiner concludes with respect to the ground under § 103(a), that it would have been *prima facie* obvious to one of ordinary skill in the art to produce a wood-like product with an external foam skin because Cope "discloses that portions of the profile may be left without a hard skin" (*id.*).

Appellants submit several arguments with respect to the ground under § 102(b). First, they argue that the surface of the Cope articles is smooth and not embossed as claimed, contending that the "vacuum tank" used to shape the profile "necessitates a smooth surface to maintain the vacuum" (brief, page 7). Appellants further point to the temperature for roller system **110** disclosed in the specification (*see above* p. 6), contending that "[b]y maintaining the temperature of the rollers above the PVC softening point temperature [of 80°C, that is, 176°F,] the surface of the PVC material is kept soft . . . to form an embossed texture," and points out that Cope "makes no use of rollers" and "does not disclose an embossed surface" (*id.*, pages 7-8). Second, appellants argue that the Cope product has a smooth surface because, in their view, Cope

discloses hard skin portions **66,68** for Cope **FIG. 4** and is silent on the characteristics of remaining portions **72,74** (*id.*, pages 8-9). Appellants point to the teaching in Cope that jacket **52** is kept at a temperature below the softening point of the extrusion material, which material begins to harden from the surface to the core when it contacts the wall of sharper **58**, contending that thus "the surface layer of the PVC material is immediately solidified" and "[f]oaming cannot occur on the surface and the profile has a smooth surface with or without hard skin [] [i]n contrast to . . . slowly [cooling] the PVC material after the exit of the die" such that "foaming takes place on the surface of the board to form an embossed texture" (*id.*, page 9).

Third, appellants argue that the claimed method "steps necessitate a difference product from" that of Cope, pointing to the "slow cooling step with rollers" and alleging that Cope "forms a consistent solid product" with jacket **52** keeping the material at a temperature below its softening point and the absence of rollers to cool the product as claimed (*id.*, pages 9-10). Lastly, appellants argue with respect to the disclosure in Cope involving **FIG. 5** thereof, that the reason finishes, including hot foil stampings, are applied after the profile is cured and hardened "is because of the fast cooling under [Cope's] process causes immediate solidification of the surface layer . . . to make a smooth surface," which is thus not embossed (*id.*, pages 11-12).

With respect to the ground under § 103(a), appellants submit two arguments. First, appellants contend that there is no motivation in Cope to produce an embossed textured surface because the material is cooled below its softening point with jacket **52** and thus "foaming cannot occur in the surface and the profile has a smooth surface with and without hard skin" which is "a smoother skin than the current state of the art" (*id.*, pages 12-13). And, second, appellants contend that "there is no motivation to make the product with an external foam skin and foam core" because the material "begins to cool as it enters the shaper and is allowed to completely cool thereafter without the use of rollers" for slow cooling which forms such a product with an embossed surface (*id.*, page 13).

In response, the examiner relies on his finding that the articles of Cope **FIGs. 4** and **5** have "embossed or raised surface portions," taking the position that "portions of a foamed body may be left without a hard skin" and "a foamed body, absent a hard skin, would have a foam surface or skin," and alleging that "outer portions 66 and 68 are always hard skinned, . . . are not

present on the entire article . . . and are not always required to be present . . . in Fig, 4," even with the affect of jacket **52**, (answer, pages 4-6).

We determine that the examiner has made out a *prima face* case under each of the statutory provisions and accordingly, we again consider the record as a whole with respect to the respective grounds of rejection in light of appellants' rebuttal arguments in the brief. *See generally, In re Oetiker*, 977 F.2d 1443, 1445, 24 USPQ2d 1443, 1444 (Fed. Cir. 1992); *In re Spada*, 911 F.2d 705, 707 n.3, 15 USPQ2d 1655, 1657 n.3. (Fed. Cir. 1990); *In re Piasecki*, 745 F.2d 1468, 1472, 223 USPQ 785, 788 (Fed. Cir. 1984). While appellants have addressed their arguments in the brief to specific grounds of rejection, we have considered all of the arguments with respect to each of the grounds of rejection.

Setting aside for the moment the two embodiments of Cope illustrated in **FIGs. 4** and **5**, we consider the differences that appellants find between the methods characterizing the claimed product encompassed by claim 21 and the methods characterizing the product disclosed by Cope. We initially find that the extruder apparatus, including the die, as shown in Cope **FIGs. 2** and **3** is an "equivalent" of the "plastifying and extruding means" clause in step "D.)" of claim 21 for purposes of § 112, paragraph six, because the extruder and die of Cope performs the identical function in substantially the same way, with substantially the same result, as the extruder and die described in appellants' specification (*see above* p. 4).

We cannot agree with appellants' argument that Cope cools the extruded material below the softening point of PVC, 80°C, that is, 176°F, in the shaper, thus immediately solidifying the surface layer of the material such that foaming cannot occur on the surface, while the method of claim 21 uses a roller system that slowly cools the PVC above that temperature. We found above the disclosure in Cope that there can be "[a] space of several inches . . . between the die exit and the shaper entrance . . . to allow some expansion of the extrudate before entering the shaper," as seen in Cope **FIG. 2**, and that "[t]he material begins to expand or foam as it passes through the die and then it begins to fully expand as it enters the shaper" (*see above* pp. 6-7). Thus, Cope would have taught one of ordinary skill in this art that the extruded material is fully expanding or foaming as it enters the shaper, that is, *before* it begins to harden against the wall of the shaper, which can be at a temperature below the softening point of the extruded material as disclosed,

from "the outside surface to the inner core" (*see above* pp. 6-7). In this respect, we found above that Cope would have taught one of ordinary skill in the art that the properties imparted to the extruded material are affected by the result effective parameters of shaper temperature and speed of the extruded material therethrough (*see above* p. 7).

In similar manner, the limitation of step "E.)" of claim 21 specifies only "slowly cooling the extruded product to create a synthetic wood-like product having an external foam skin and a foam core," and in such a method disclosed in the written description in the specification, after leaving the extruder, the extruded material travels across a short space, then encounters cooling roller unit **117** that can be controlled at a range of about 5° to about 30°C, that is, about 41° to about 86°F, which is well below the PVC softening point of PVC, 80°C, that is, 176°F, as relied on by appellants, and next encounters roller system **110** that can be controlled at a range of about 25° to about 250°C, that is, about 77° to about 482°F, which range encompasses said softening point of PVC that is 55°C above the lower end of the range (*see above* p. 6).

Thus, the extruded material in the methods of Cope can foam to the same or substantially same extent before reaching a shaper which begins to cool and harden the surface and then the core thereof at a temperature below the softening point thereof, as does the extruded material in methods encompassed by claim 21 before reaching at least one roller unit which begins to cool the surface and then the core at a temperature well below the softening point of PVC.

Therefore, we find little, if any, difference between process steps encompassed by the method of claim 21 and those taught by Cope at this point in the respective methods of forming the same type of product from the same type of extruded materials. Indeed, the same or similar amount of foam generated in the extruded material by the methods at the time of entering a cooling unit that begins to harden the material from the surface inward would create the same surface foam skin and the same foam core.

We find that once the extruded material begins to harden, it can still be shaped to form the final product while it continues to harden, as shown by the disclosure in Cope with respect to the extruded material passing through the smooth walled shaper, and from the disclosure in the specification with respect to the material passing through cooling roller units that can have smooth or patterned rollers. Indeed, in methods encompassed by appealed claim 21, one of

ordinary skill in the art would understand that the extruded material is compressed in the nip of at least two rollers in roller system **117**, which can have additional rollers, and in the nip of each of the paired rollers of the at least three or more rollers in roller system **110**, which can have additional rollers, as illustrated in specification **Fig. 3** and described in the specification (*see above* p. 6). Furthermore, contrary to appellants' arguments, we find that the methods of Cope no more immediately solidify the surface layer of the material in the shaper than do methods encompassed by appealed claim 21 in roller systems **117** and **110**. In these respects, we note again here the teachings of Cope that the properties imparted to the extruded material are affected by the result effective parameters of shaper temperature and speed of the extruded material therethrough (*see above* p. 7).

Thus, in view of the similar process conditions between the methods encompassed by appealed claim 21 and the methods disclosed by Cope, the dispositive issue in this appeal is whether the surface of the claimed synthetic wood-like product encompassed by appealed claim 21 and the surface of the product of Cope are the same or similar such that the claimed products and the products disclosed by Cope reasonably appear to be identical or substantially identical. Appellants submit that the claimed products have a "surface embossed texture" which characteristic is not disclosed by Cope, while the examiner contends that such characteristics are shown by Cope **FIGs. 4 and 5**.

We found above that the embodiments of Cope illustrated in **FIGs. 4** and **5** have the appearance of smooth surfaces with the exception of the decorative detail **76** in **FIG. 5** which would have been produced by hot stamping the smooth surface of the article *after* the article has cured and hardened in the reference methods, and indeed, after the method steps specified in appealed claim 21 have been satisfied (*see above* p. 7). We note here that the arguments with respect to "hardness" advanced by appellants and the examiner are not persuasive with respect to whether the surfaces of the illustrated embodiments are "smooth" or "embossed" as a result of a process leading to the cooling and hardening of the extruded material. As we found above, expanding or foaming of the extruded materials leading to the claimed products and those of Cope and thus the surface characteristics of the products, occurs before the extruded material begins to harden.

Thus, on this record, we find as a matter of fact that the two embodiments of the references described in Cope **FIGs. 4** and **5** as having the appearance of smooth surfaces, that is, no apparent "surface embossed texture" imparted by the process of forming the extrusion profile, do not identically describe the claimed products encompassed by appealed claim 21 within the meaning of § 102(b). *See Titanium Metals Corp. of Am. v. Banner*, 778 F.2d 775, 780, 227 USPQ 773, 777 (Fed. Cir. 1985) ("[A]nticipation under § 102 can be found only when the reference discloses exactly what is claimed and that where there are differences between the reference disclosure and the claim, the rejection must be based on § 103 which takes differences into account. D Chisum, *Patents* § 3.02.").

Accordingly, we reverse the ground of rejection of appealed claims 21 through 24 under 35 U.S.C. § 102(b) as anticipated by Cope. *See Spada*, 911 F.2d 705, 707 n.3, 15 USPQ2d 1655, 1657 n.3.

Turning now to the rejection of claim 21 under § 103(a), we find that one of ordinary skill in the art working within the teachings of Cope would have reasonably arrived at products encompassed by this claim. Indeed, on this record, as we found above, the foaming of the extruded material before entering the shaper as disclosed by Cope would reasonably appear to result in some bubbles migrating to and bursting on the surface of the extruded material in the same manner as in the foaming of the extruded material before entering roller system **117** in methods encompassed by claim 21 disclosed to result in the "surface embossed texture." We find that at least a part of the surface of the product of Cope would retain such characteristics because the smooth cylinder wall of the shaper would affect the surface as well as the shape of the product in the same or similar manner as the nips of the smooth rollers in the cooling roller systems of methods encompassed by claim 21. Indeed, Cope discloses that the products "have a smoother skin" than the prior art, not the skin is "smooth" *per se*, the "smooth" appearance of the illustrated embodiments of Cope **FIGs. 4** and **5** notwithstanding.

Accordingly, based on the substantial evidence in Cope, we are of the opinion that the claimed synthetic wood-like products encompassed by appealed claim 21 reasonably appear to be identical or substantially identical to the products disclosed by Cope, even though the reference is silent with respect to the characteristics of "surface embossed texture" and specified Shore

Hardness and the products of the reference are prepared by methods which use a shaper instead of roller systems to progressively cool and shape the product. Thus, the burden has shifted to appellants to establish by effective argument or objective evidence that the claimed product patentably distinguishes over the disclosure of Cope even though the rejection is based on § 103(a). *See generally, In re Best*, 562 F.2d 1252, 1254-56, 195 USPQ 430, 432-34 (CCPA 1977) ("Where, as here, the claimed and prior art products are identical or substantially identical, or are produced by identical or substantially identical processes, the PTO can require an applicant to prove that the prior art products do not necessarily or inherently possess the characteristics of his claimed product. See *In re Ludtke*, [441 F.2d 660, 169 USPQ 563 (CCPA 1971)]. Whether the rejection is based on "inherency" under 35 USC § 102, on "prima facie obviousness" under 35 USC § 103, jointly or alternatively, the burden of proof is the same, and its fairness is evidenced by the PTO's inability to manufacture products or to obtain and compare prior art products. [Footnote and citation omitted.]"); *In re Skoner*, 517 F.2d 947, 950, 186 USPQ 80, 82 (CCPA 1975) ("Appellants have chosen to describe their invention in terms of certain physical characteristics . . . . Merely choosing to describe their invention in this manner does not render patentable their method which is clearly obvious in view of [the reference]. [Citation omitted.]"); *In re Fessmann*, 489 F.2d 742, 744, 180 USPQ 324, 325-26 (CCPA 1974) (citing *In re Brown*, 459 F.2d 531, *535*, 173 USPQ 685, 688 (CCPA 1972)) ("In Brown, the court was in effect saying that the [PTO] bears a lesser burden of proof in making out a case of prima facie obviousness for product-by-process claims because of their peculiar nature than would be the case when a product is claimed in the more conventional fashion."); *cf. Spada*, 911 F.2d 705, 708-09, 15 USPQ2d 1655, 1657-58 ("The Board held that the compositions claimed by Spada 'appear to be identical' to those described by Smith. While Spada criticizes the usage of the word 'appear', we think that it was reasonable for the PTO to infer that the polymerization by both Smith and Spada of identical monomers, employing the same or similar polymerization techniques, would produce polymers having the identical composition."); *In re Aller*, 220 F.2d 454, 456-58, 105 USPQ 233, 235-37 (CCPA 1955) ("[W]here general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation.").

We are not convinced otherwise by appellants' argument that Cope employs "[a] vacuum draw on the shaper [that] helps maintain the profile shape as the cellular materials expands" (col. 5, ll. 34-35) which "necessitates a smooth surface to maintain the vacuum" (brief, page 7). Indeed, Cope thus discloses only that the profile shape is maintained, not that the vacuum helps smooth the surface of the profile. Furthermore, we find that a vacuum can be maintained even if less than the entire surface of the profile is in contact with the smooth wall of the shaper. This is because only enough material must be in contact with the cylinder wall sufficient to form a seal therewith to create the vacuum.

Accordingly, based on our consideration of the totality of the record before us, we have weighed the evidence of obviousness found in Cope with appellants' countervailing evidence of and argument for nonobviousness and conclude that the claimed invention encompassed by appealed claims 21 through 24 would have been obvious as a matter of law under 35 U.S.C. § 103(a).

The examiner's decision is affirmed.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 CFR § 1.136(a)(1)(iv) (September 2004).

AFFIRMED

CHARLES F. WARREN Administrative Patent Judge	)	
PETER F. KRATZ Administrative Patent Judge	)	BOARD OF PATENT APPEALS AND INTERFERENCES
BEVERLY A. PAWLIKOWSKI Administrative Patent Judge	)	

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